THE CHIEF CHARACTERISTIC OF THE TRANSPORT CONDITIONS OF THE SOUTHERN PART OF THE GREAT HUNGARIAN PLAIN

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The transport relations of the southern part of the Great Plain

It is nearly impossible, but for the determination of the chief characteristics it is not even necessary to assess fully for all productavs the trade relations of the southern part of the Great Plain on the basis of the data vailable ("analysis of the aver average transportation distances of the supplying and consuming areas of the more important products demanding care in transportation"). NIM publication of the Institute of Industrial Economy and Factory Management. The commodity composition of the road and rail haulage, the direction of the flow of the most important goods, and the transport structure of the region can be determined.

It is valid for all levels of regions that it is the role of the region in the national division of labor that determines the structure and main direction of the trade in goods; consequently the transportation relations must reflect the production profiles of the regions. In the case of the southern part of the Great Plain the production profile, as is known, is composed mainly of the branches of the processing industry and agriculture. Thus it is understandable that largest lost of impoted goods are mining products: coal, stones, pebbles (40%); basic material industrial products: cement and steel (10%); and industrial products for the agriculture: artificial fertilizers (7%) and wood products (4%). Conversely, among the goods exported from the region orude oil and its products (15%), cereals and other agricultural products, milling products, sugar, etc. and characteristically bricks and tiles figure in considerable amounts. It will be seen from this list that the amount of goods imported into the region exceeds the amount of goods sent out of it.

The changes that have taken place in the profile of the region in the last decade are exactly reflected in the changes in the trade relations of the southern part of the Great Plain and in the composition of trade. Grude oil and natural gas figure as important items not only in the export but the increase of production has reduced, and in the future will further reduce, the import of energy supplies. The development of machine industry and agriculture has increased the use of steel and artificial fertilizers. It is unlikely that in the 1970' s changes of similar scale as in the preceding decade will take place; the minor changes that are taking place even now do not affect essentially the structure of trade in good.

The directions of the transporteon of the abovementioned items charateristic of the southern part of the Great Plain are, similarly to their composition, usually given in consequence of the national division of labor and its main directions can be considered stable.

The southern part of the Great Plain has developed the firmest trade ties with Budapest. The bulk of industrial goods comes from that town and the crude oil and gas as well as the larger part of the food industrial and agricultural products flow there. From Borsod county the region receives mainly coal, stones, cement, steel, and arti-

ficial fertilizers; from central Dunántúl (Transdanubia) similar products arrive with the exception of steel, only in smaller quantities, and the other way round mainly food and smaller amounts of industrial ready made products flow back into both regions. It is first of all the textile industry that has cooperative connections with Kisalföld ("Small Plain"). The trade relations of the southers part of the Great Plain with the two, neighboring regions, southern Dunántúl (Transdanubia) and northern Tiszántúl (Transtheissia or Easttheissia or lowland region east of the Tisza) are rather weak.

Thus owing to the trade relations between the regions, the southern part of the Great Plain is part of a nationwide, highly centralized, trade in goods, the centralized character of which is reinforced by the circumstance that the bulk of the trade with Kisalföld (the "Small Plain"), central Dunántúl and Borsod county goes through Budapest because of the greatly centralized system of roads and railrozds.

The traffic connections of the southern part of the Great Plain correspond to the flow of goods in trade, but it cannot be said that they are in agreement in every respect.

As it appears from the foregoing, considerable amounts of industrial and agricultural products reach their place of destination, especially Dunántúl, only by detour. The railroad connections of the southern part of the Great Plain with the regions of Dunántúl are very weak (road connections being slightly better) because even the use) of the only direct line, the Baja line, involves great loss of time owing to the detour. It is somewhat easier to send shipments to northern Tiszántúl on the Szolnok—Debrecen line, although it is not free from detours either, but the goods can be transported on it faster than on the other lines. It is interesting that the eastern part of the region, Békés county, is not in a better position; its nearness means no great advantage because it is not easier to reach from here the eastern counties of the country by rail.

It is characteristic of the transport geographic position of the southern part of the Great Plain that for centuries there have been important international roads cros. sing it. This role is played in our days by two railroads, a highway, and the Danube) Of course the same roads or ways play an important part in the internal trade of goods. Consequently the achievement of the road network of the region depends also on the international connections of the country, especially with Yugoslavia and Roumania. In this respect there have been important changes in all branches of transportation in the past decade. The greatest problem is the sudden increase in internal and transit trade; e. g. the transit traffic of goods has risen tenfold in the last ten years. The E5 road will soon be unable, even in its modernized form, to satisfy the requirements of traffic. With the completion of the superhighway the transportation geographic position of the region will be far better, for it will be crossed by one of the most important roads of Europe. A radical change can be expected also in the water traffic of the region in the following ten years with the construction of the canals between the Danube, Rhine and Maine, the Danube and Oder and the Danube and the Tisza, and the building of barrages on the Tisza.

Although there will be no sudder changes in railroad traffic, a considerable increase in the transit trade of the region can be expected.

It is difficult to determine exactly the ratios of achievement of the branches of transportacion for the territory of the southern part of the Great Plain because neither the rail nor the road transport data are calculated for the region, and there are no data whatsoever of the terrirorial distribution of water transport. The two most important

branches of transportation, road and railroad transport, can be compared because the data can be calculated for the territory of the southern part of the Great Plain.

The achievement of the railroad in 1970 was 2268 million tons (km which is 11.4% as compared to the national value. The figures for road transport are lower: 201 million tons/km, that is 7,2%. From this it appears that the achievement of the railroad as compared with the roads represents a higher ratio in the southern Part of the Great Plain than in other territories of the country.

We get essentially the same results if we compare the amounts of goods exported from the region. The amount of goods carried on the railroad lines of the region was 10 281 000 tons, i. e. 8.2% of the national value. Though the absolute value of road haulage is higher than this (11 237 000 tons), its ratio in the road tranport of goods of the whole country was lower than that of the railroad (7.4%). That is to say the amount of goods transported by road was larger here (as als in the whole country) than that transported by rail, but in a somewhat smaller measure than on the national level.

If we take the achievement of the two branches of transportation as 100%, the ratio of rail transport in 1970 was 43.6% in the whole country, and 47.7% in the region The achievement expressed in tons/km was in the same order 87.4% and 918 respectively.

While the southern part of the Great Plain has nearly 20% of the railroad network of the country and 17% of its network of highways, the ratio of the region in the goods traffic of the country in 1970 was only 10.9%, in tons/km 8%. This means that the loading of both networks was much less than (about half as much as) the national average.

Rail transport

The density of the railroad network of the railroad network of the southern part of the Great Plain (10.3 km per 100 km) can be said to be satisfactory and it is essentially the same as the national average (10.2 km per 100 km); in fact, its index referred to the population is even somewhat more favorable. (In the southern part of the Great Plain there is a railroad stretch of 12.9 km for 1000 persons, while in the whole of the country the stretch for the whole population is 9.1 km). In spite of this — as has been mentioned earlier its achievement is poorer than the national average and thus the favorable density of the railroad network is not the reflection of an aconomically developed area but the result of other factors. The ratio of less economic lines is highest here. This appears among other things also from the fact that half of the network consists of sidetracks and the ratio of narrow-gauge railroads is very high, about 15% (i. e. more than 60% of the narrow-gauge railroads of the country). This is the explanation of the fact that in the last 10 years the length of the railroads has decreased more than in other areas of the country: the ratio of the little used, less economic lines is highest here and their closure consequently affected more this part of the Great Plain. This process has not stopped yet; therefore a further reduction in the length of the railroad network can expected in the future.

The bulk of railroad transportation of goods is concentrated on a few main lines, first of all on the transit traffic lines between Budapest—Szolnok—Békéscsaba—Lőkösháza and Budapest—Kiskőrös—Halas—Kelebia. Also important are the lines connecting the towns of Szeged—Kecskemét—Budapest and Békéscsaba—Szeged—

—Kiskunfélegyháza—Halas—Baja (Fig. 1). If we compare the transportation data of 1959 and those of 1970 it appears that the decade-long development brought no essential changes in the territorial ratios of goods traffic; in fact the concentration increased owing to the fact that while the total transport of goods rose twofold, the increase on the lines mentioned here was much larger. At the same time traffic hardly changed on many sidetracks, and in places it even decreased (Figs. 2 and 3).

The increase of the goods traffic of the southern part of the Great Plain was greater than the national average. The tons of goods per person per km in the country between 1960 and 1970 rose from 1336 tons (km to 1922 tons/km, at the same time it rose in the region from 452 tons/km to 1552 tons/km, which no doubt is connected with the rapid development of industry, mining, and considerable investments.

The railroad is the most important means for handling goods traffic between the regions; consequently the structure of goods traffic reflects the profile of the region not only at the level of macro but also of microregions. Among the items of consignment mining products are dominant and thus the bulk of this kind of goods determines the ratio of the incoming and outgoing commodities (Table 1). Sending out goods is dominant only in the mining areas (not counting transit traffic); elsewhere the amount of goods delivered is larger. The amount of mining products (coal, stone, pebbles, sand, crude oil) delivered is in direct proportion with the state of development of industry in each microregion or even settlement. Only the case of Orosháza is different because large amounts of sand are brought here for glass production. On the other hand, there are very great differences; e. g. pebbles and sand are sent from the regions of Baja and Szeged and a very large part of the crude oil also comes from the region of Szeged. These products constitute 30% of the transported goods. The situation is similar in the case of the other products, too. In the transportation of bricks and tiles the region of Békés, in the case of sugar the regions of Békés and Orosháza, in the case of potatoes the region of Szeged stand out and conversely; in respect of the sending of bread and fodder grains, as well as living and slaughtered animals the regions of Kecskemét and Halas fall behind the others. Similar is the situation in the transport of milling products. The order is changed again in the case of the transport of vegetables and fruits because here the vegetable and fruit growing areas are prominen (Table 2). From the above enumeration it follows logically that while the ratio of the goods sent out indicates the structure of production only in some places (e. g. in the case of sugar beet or sand) but shows roughly its scale, the structure of goods sent reflects the production profile fairly well.

It is work while to compare the structure map of the railroad traffic of goods in the individual microregions in relation to the population with the picture of the industrial structure made by a similar method. There is no need to prove the similarity between the two pictures, but there are many differences, too. This is due to the fact that on the one hand the list of articles of the railroad statistics is not detailed enough and does not mention particularly a number of light industrial products, e. g textiles, shoes, etc., on the other hand the largest part of just the goods mentioned is transported on trucks. Thus the structure of the goods sent by rail can indicate the profile of production of the region in question but it cannot be identified with it because it comprises only part of the goods transported.

The scale of railroad traffic shows important differences in the different microregions. The order of the regions in respect of the scale of goods traffic agrees essentially with the order of industrial state of development (Table 3).

TABLE 1.

Structure of rail goods traffic in the microregions (1000 tons)

OUTGOING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Baja	0,2	—	—	—	769,7	—	0,1	17,6	0,1	0,5	0,1	0,7	23,7	7,3	1,6
Kecskemét	1,7	—	1,0	1,3	0,5	11,2	14,5	0,1	—	2,5	0,1	0,4	21,5	25,8	6,7
Kkhalas	—	—	—	—	—	161,2	—	—	—	0,5	0,2	0,3	1,9	9,7	1,6
Szeged	0,6	—	—	0,2	765,7	1122,4	7,3	15,7	0,1	1,3	0,4	3,6	21,7	36,5	9,2
Szentes	—	—	—	0,1	—	94,7	1,0	—	—	49,2	—	—	3,9	41,5	7,5
Békéscsaba	9,4	—	—	0,33	1,2	—	6,1	0,7	—	265,7	0,8	1,8	1,1	59,9	18,6
Orosháza	0,5	—	—	0,1	—	116,1	4,3	—	1,6	18,3	—	0,1	—	32,2	27,6
Togather	12,4	—	1,0	2,0	1537,1	1505,6	33,3	34,1	1,8	338,0	1,6	6,9	73,8	212,9	72,8

	16	17	18	19	20	21	22	23	24	25	26	27	28
Baja	51,5	9,2	61,5	20,4	0,8	25,4	9,4	5,0	114,6	12,4	1,4	—	1133,1
Kecskemét	18,2	7,0	31,9	77,9	22,5	48,8	0,3	4,6	493,9	24,6	61,1	—	878,1
Kkhalas	15,7	3,2	21,2	38,5	—	17,1	1,5	7,5	218,4	9,9	40,0	863,4	1411,8
Szeged	89,1	107,4	145,4	109,4	46,7	91,5	11,7	17,3	615,3	57,6	57,9	872,1	4206,1
Szentes	77,1	5,8	185,8	11,4	1,5	32,1	8,0	26,8	365,1	18,3	20,3	—	950,1
Békéscsaba	73,0	1,8	147,0	42,9	—	35,1	7,0	26,2	271,0	22,7	29,5	713,8	1735,8
Orosháza	51,5	11,5	71,0	2,6	27,1	6,2	5,2	12,3	258,3	8,9	22,2	—	677,6
Togather	376,0	145,9	663,8	303,1	98,6	256,2	43,1	99,7	2336,6	154,4	232,4	2449,3	10992,4

1 = coal, briquette; 2 = iron ore, manganese ore; 3 = bauxite; 4 = strone; 5 = pebble; 6 = oil, oil product; 7 = iron and metal (steel) ware, 8 = artificial; 9 = coke, coke briquette; 10 = brick, tile; 11 = lime; 12 = cement, 13 = cement-ware; 14 = milling-product; 15 = sugar; 16 = corn, maise; 17 = potato; 18 = sugar-beet; 19 = wood, timber; 20 = earth, sand; 21 = fruit, greens; 22 = hay, straw; 23 = animals; 24 = other goods; 25 = piece-goods; 26 = raily coal, stone, other; 27 = import, transit; 28 = rail goods togather

TABLE 2.

Structure of rail goods traffic in the microregions (1000 tons)

INCOMING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Baja	192,6	0,1	—	88,5	20,7	35,0	12,7	110,5	5,8	34,9	16,1	52,4	12,7	8,4	1,5
Kecskemét	214,7	—	—	124,6	149,4	73,0	33,1	94,5	9,5	44,2	22,0	45,9	46,7	1,0	3,1
Kkhalas	145,2	0,3	—	70,3	81,7	28'2	22,2	81,3	2,2	39,9	17,9	44,0	18,3	15,8	6,6
Szeged	606,6	1,9	1,1	346,4	734,9	169,8	103,3	316,6	10,7	78,3	60,2	233,4	149,6	35,1	11,0
Szentes	99,0	—	—	38,8	198,1	30,4	14,7	29,4	2,3	15,2	9,2	32,9	18,0	6,2	2,4
Békéscsaba	374,4	16,6	—	402,4	220,0	80,2	48,2	122,7	4,4	8,5	18,7	100,6	32,3	18,1	2,6
Orosháza	192,6	—	0,4	239,2	153,4	56,9	14,9	67,6	—	7,2	9,3	34,5	10,4	9,3	5,3
Togather	1780,4	18,9	1,5	1310,2	1558,2	473,5	249,1	822,6	34,9	228,2	153,4	543,7	288,0	93,9	32,5

	16	17	18	19	20	21	22	23	24	25	26	27	28
Baja	3,5	0,7	—	28,8	19,7	1,2	0,3	2,8	243,6	16,9	16,8	—	926,1
Kecskemét	11,0	7,5	1;8	44,6	19,1	11,8	—	10,8	165,2	22,6	63,9	—	1 220,0
Kkhalas	18,6	1,1	—	44,0	4,4	5,4	0,2	1,3	176,4	9,9	175,8	0,7	1 011,7
Szeged	45,9	4,1	4,3	237,4	73,9	77,2	8,1	3,2	740,2	63,4	317,9	3,4	4 437,9
Szentes	25,8	0,8	—	31,3	27,1	12,5	—	—	100,6	5,7	18,6	—	719,0
Békéscsaba	69,3	8,3	162,8	116,0	47,4	0,3	—	4,9	232,9	20,3	186,0	1462,0	3 769,9
Orosháza	19,1	1,2	120,0	38,4	167,7	1,0	—	0,2	183,2	6,4	25,2	—	1 318,7
Togather	193,2	23,7	288,9	540,4	359,3	109,4	8,6	23,2	1842,1	155,2	804,2	1466,1	13 403,3

1=coal, briquette; 2=iron ore, manganese ore; 3=bauxite; 4=stone; 5=pebble; 6=oil, oil product; 7=iron and metal (steel) ware; 8=artificial; 9=coke, coke briquette; 10=brick, tile; 11=lime; 12=cement; 13=cement-ware; 14=milling-product; 15=sugar; 16=corn, maise; 17=potato; 18=sugar-beet; 19=wood, timber; 20=earth, sand; 21=fruit, greens; 22=hay, straw; 23=animals; 24=other goods; 25=piece-goods; 26=raily coal, stone, other; 27=import, transit; 28=rail goods togather

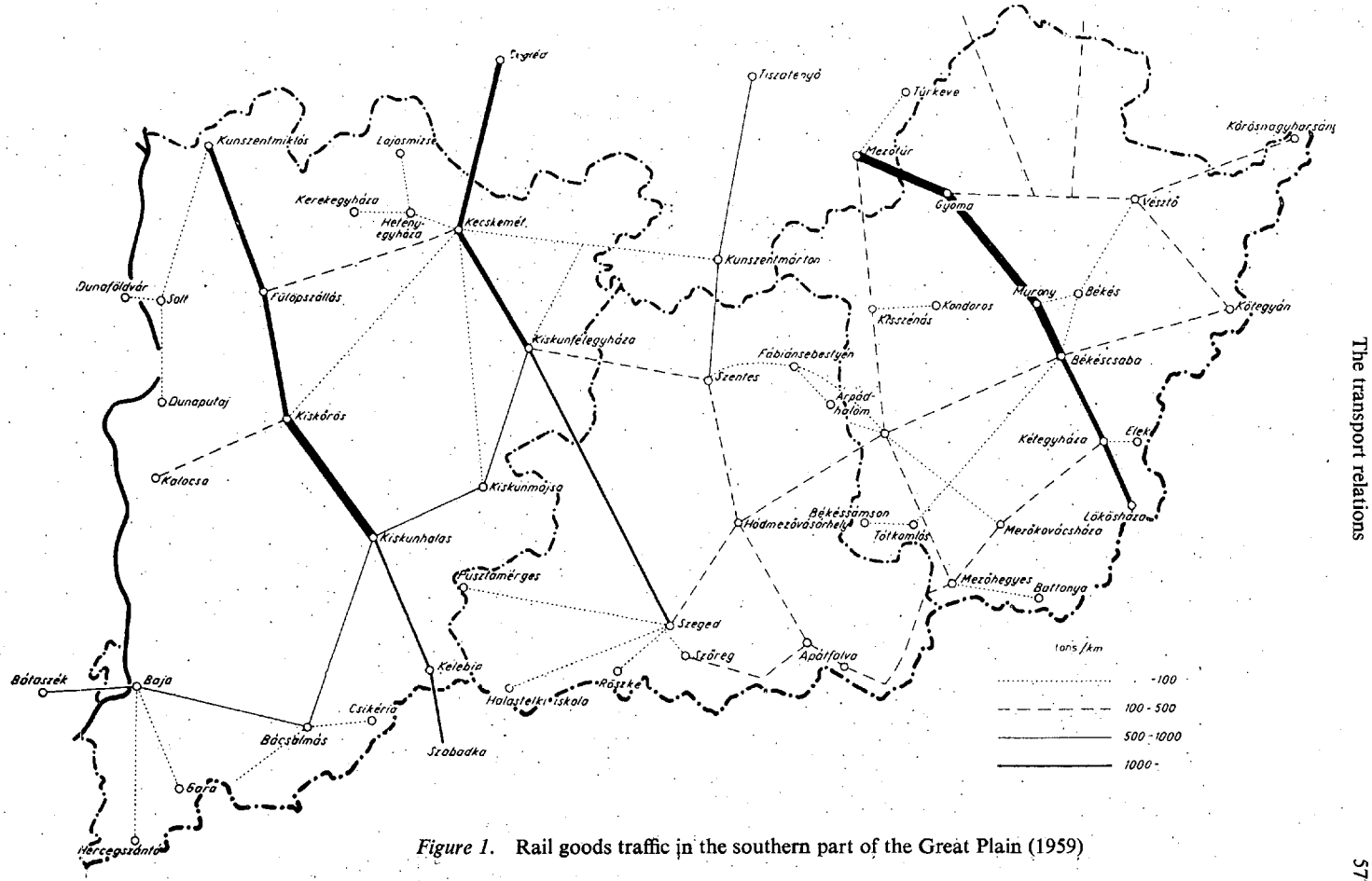


Figure 1. Rail goods traffic in the southern part of the Great Plain (1959)

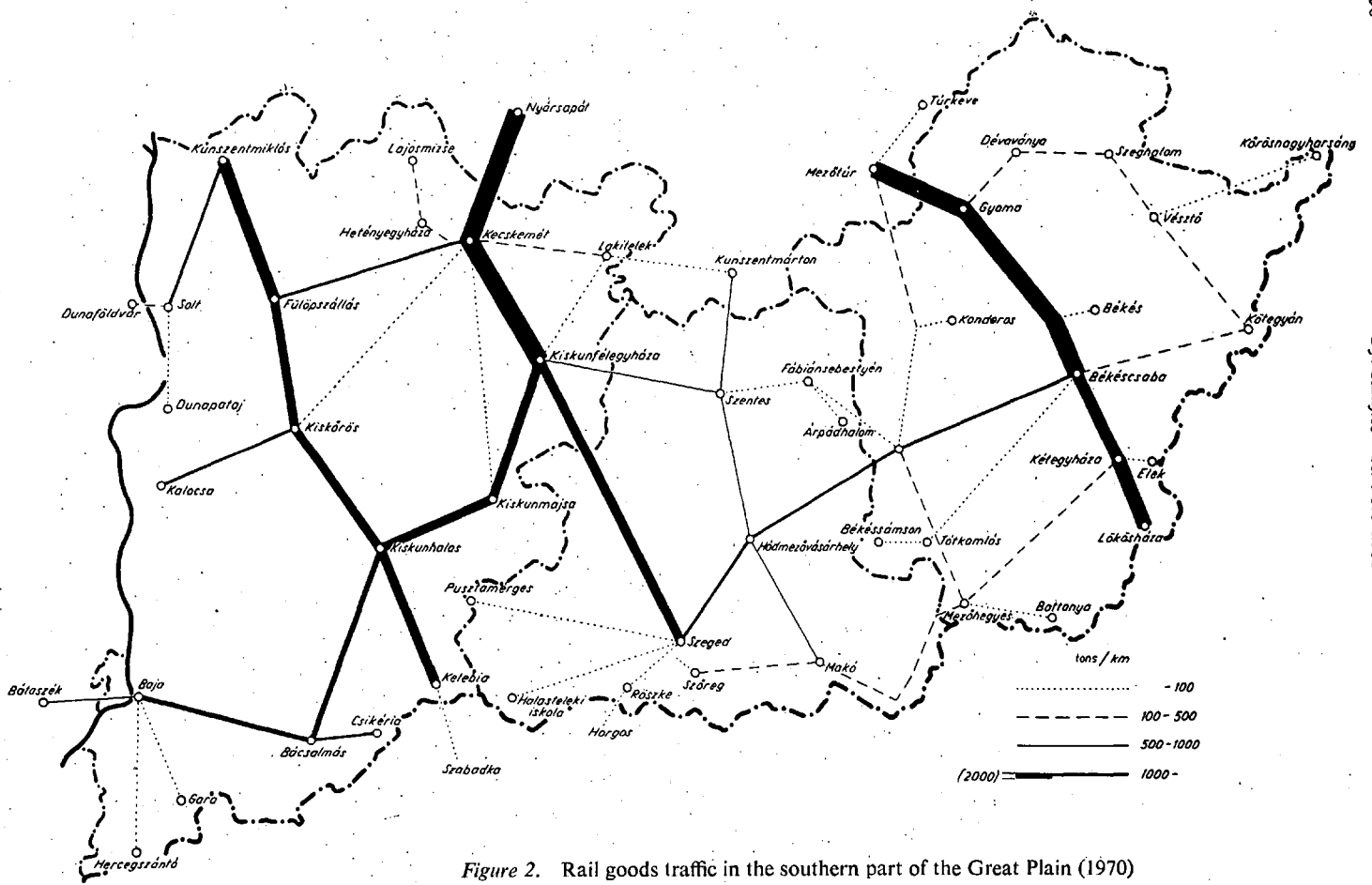


Figure 2. Rail goods traffic in the southern part of the Great Plain (1970)

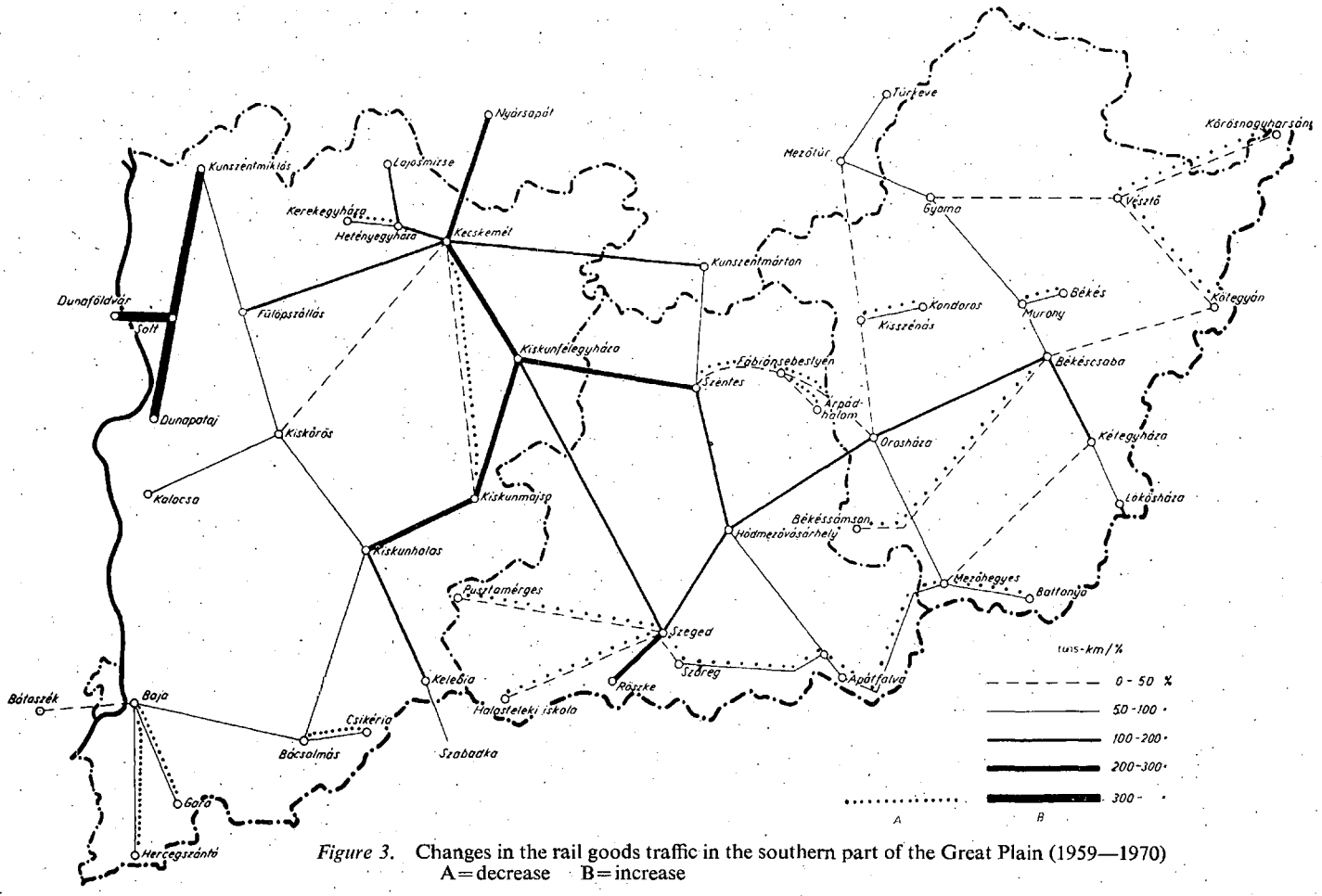


Figure 3. Changes in the rail goods traffic in the southern part of the Great Plain (1959—1970)
A = decrease B = increase

TABLE 3.
Rail traffc in goods in individual microregions

Region	sending of goods in 1000 tons	transit	Region	delivery of goods	Region	Total
1. Szeged	3334	4206	1. Szeged	4559	1. Szeged	7893
2. Baja	1133		2. Békés	2211	2. Békés	3234
3. Békéscsaba	1023	1736	3. Orosh.	1396	3. Kecskemét	2093
4. Szentes	950		4. Kecskemét	1251	4. Orosháza	2074
5. Kecskemét	878		5. Kkhalas	979	5. Baja	2012
6. Orosháza	679		6. Baja	879	6. Szentes	1657
7. Kiskunhalas	548		7. Szentes	707	7. Kkhalas	1527

Szeged holds a prominent place in every respect. In goods traffic (without transit) the region of Békés is second, coming before the region of Kecskemét which can be explained mainly by the higher ratio of bulk goods (coal, stones, pebbles, sugar beet, grains, etc.) Between the reception and sending of goods in the different regions there are great differences of order and amount. The region along the Danube is secons in regard of the amount of goods sent out, while it is sixth as regards the reception of goods. The very great difference is due to the rail transport of sand from the Danube and pebbles. A similar difference can be seen in the region of Orosháza, only the other way round: here the sand arriving from outside adds to the amount of goods received. On the other hand, if we count also the transit traffic, it comes to the third place.

Railroad transport

Transport by road as we have mentioned earlier is slighly more efficient than transport by rail but it does not follow from this that it is the more important branch of transport and even the posing of the question in this way is not correct because both branches of transport have their own spheres of function that must not be left out of consideration in the case of a comparison between them. As is well known it is the task of road transport to handle short distance traffic and the more valuable long distance traffic especially as a means of the internal traffic of goods in the mesoregion.

The density of the road network of the southern part of the Great Plain (100 km 29.1 km) is somewhat lower than the national average (100 km² 31.8). Not even the relatively better developed road network of Csongrád county reaches the national level. Nearly 17% of the public roads of the country are in the region. The length of the roads has only slightly increased in the last ten years but the road network has undergone a very important qualitative change which is reflected also by the decrease of waterbound macadam roads (45%) and the increase of dust-free roads (19%) (Table 4). Besides this the lenght of not well built roads has considerably decreased. In spite of the development the ratio and breadth of up-to-date roads does not reach the national average; at the same time the ratio of poorly built roads, by-roads, and approach roads is far higher. The quality of the road network of the region meets less and less the requirements of the rapidly developing industry and the fast growing loading due to home and international traffic.

TABLE 4.

Pavement of the roads

(km)

County	Pavement of the roads	1965	%	percent of change	1970	%	percent of change
Bács-Kiskun	A dustless	1941			2031		+4,6
	A macadam road	61			—		−100,0
	A unbuilding road	187			186		−0,5
	Togather	2189	43,8		2217	43,9	+1,3
Békés	A dustless	582			767		+31,8
	A macadam road	836			659		−21,2
	A unbuilding road	88			88		—
	Togather	1506	30,1		1514	30,0	+0,5
Csongrád	A dustless	842			1206		+43,2
	A macadam road	400			52		−87,0
	A unbuilding road	66			62		−6,1
	Togather	1308	26,1		1320	26,1	+26,9
Regions togather	A dustless	3356			4004		+19,0
	A macadam road	1297			711		−45,2
	A unbuilding road	431			336		−1,5
	Togather	5003	100,0		5051	100,0	+0,9

The average traffic load of the road network of the southern part of the Great Plain is below the national value; e. g. while there is 5030 tons of loading for 1 km of stretch in the country, the same index in the region is not half this value: 2240 tons for 1 km. The traffic values compared with the population show roughly the same ratio. Thus in the whole country 14.7 tons fall to 1 person (277 tons/km) while in the region 7.7 tons/137 tons/km).

In the past 5 years road traffic in the region grew nearly 30% (in tons of goods per km 7.2%), i. e. more than the national value. The rate of growth was highest in Csongrád county. In Bács county the change can be considered only very moderate. Thus the national imbalance has decreased as a result of the development of the last years, but the territorial differences have increased in the region (Table 5).

At present 9% of the bus stations, 13% of the truck stock, and 20% of the traction engines are to be found in the region. Considering further the kinds of vehicles we find that the number of automobiles in 1970 was 31 327 (i. e. 13% of the automobiles of the country) and the number of motorcycles of 125 cm^2 capacity is 59 000. The number of automobiles per 10 000 inhabitants is here 214, that is slightly less than the national average. (In fact the number of automobiles in Csongrád and Bács-Kiskun counties is higher than the national average, being lower only in Békés county). The ratio of the number of motorcycles to the population is much higher than the national average. The rate of growth of the automobile park in the last 5 years has been faster in the region than in the other regions of the country, and in consequence of it now surpasses the average of the regions. This fact reflects in part dynamic economic development of the region. The economic growth will continue in the future and therefore it can be expected that the stock of road vehicles will frow similarly. In addition we must reckon the sudden increase in international traffic mentioned earlier, and then it is easy to see that the road network must be modernized and the service establishement must be developed if we are to keep up with this growth.

Earlier we have referred to the fact that the structure of the goods sent by rail reflects in part the production profile of the microregion. The same cannot be said of the structure of the road traffic in goods in spite of the fact that it is just as closely connected with the economic life because the structure of road taffic in goods depends on the production profile only in a small degree. The transportation of mining products (stones, pebbles, sand, earth, etc.) is of such dimensions that the amount of transported industrial materials agricultural products and especially the amount of industrial finished products is quite small in comparison (Table 6).

It is difficult to judge the road traffic relations between the microregions for want of more recent data concerning traffic. In the nearly 10 years since the last collection of data (in 1963) the regions themselves and of course also their relations have changed considerably. The figures shown here permit the drawing of well-founded conclusions only through comparison with the present situation. This unfortunately can be done only later (Figs. 4, 5, 6).

The road traffic of goods and passengers is very closely connected with the internal economic and social processes of the microregions. We will deal with this later in detail.

The network of energy transmission lines influences the relations of the microregions to a lesser degree; therefore we do not want to deal with this in detail and mention only that the length of the high tension (120—220 Kw) electric long-distance

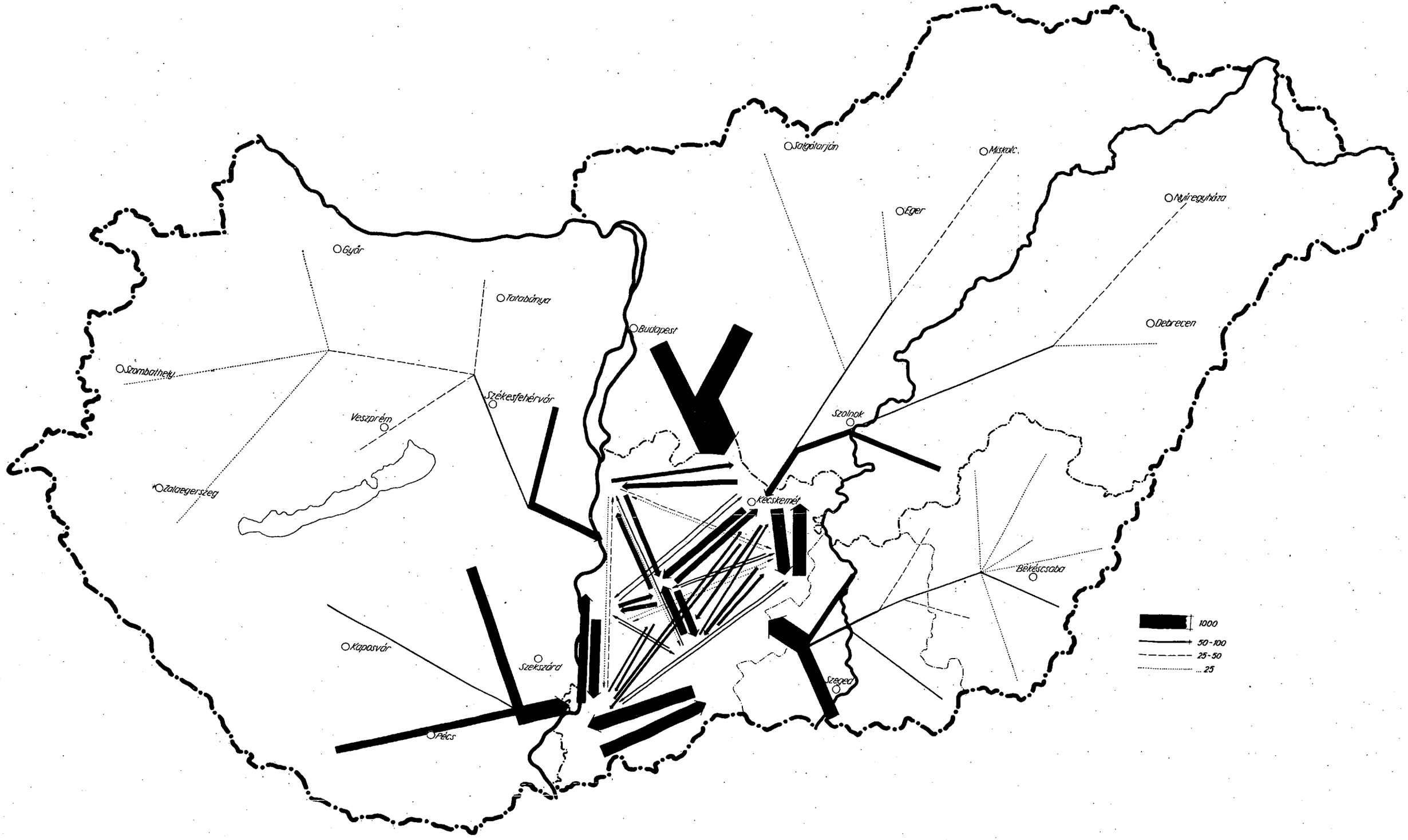


Figure 6. Vehicle traffic in the districts of Bács county (1963)

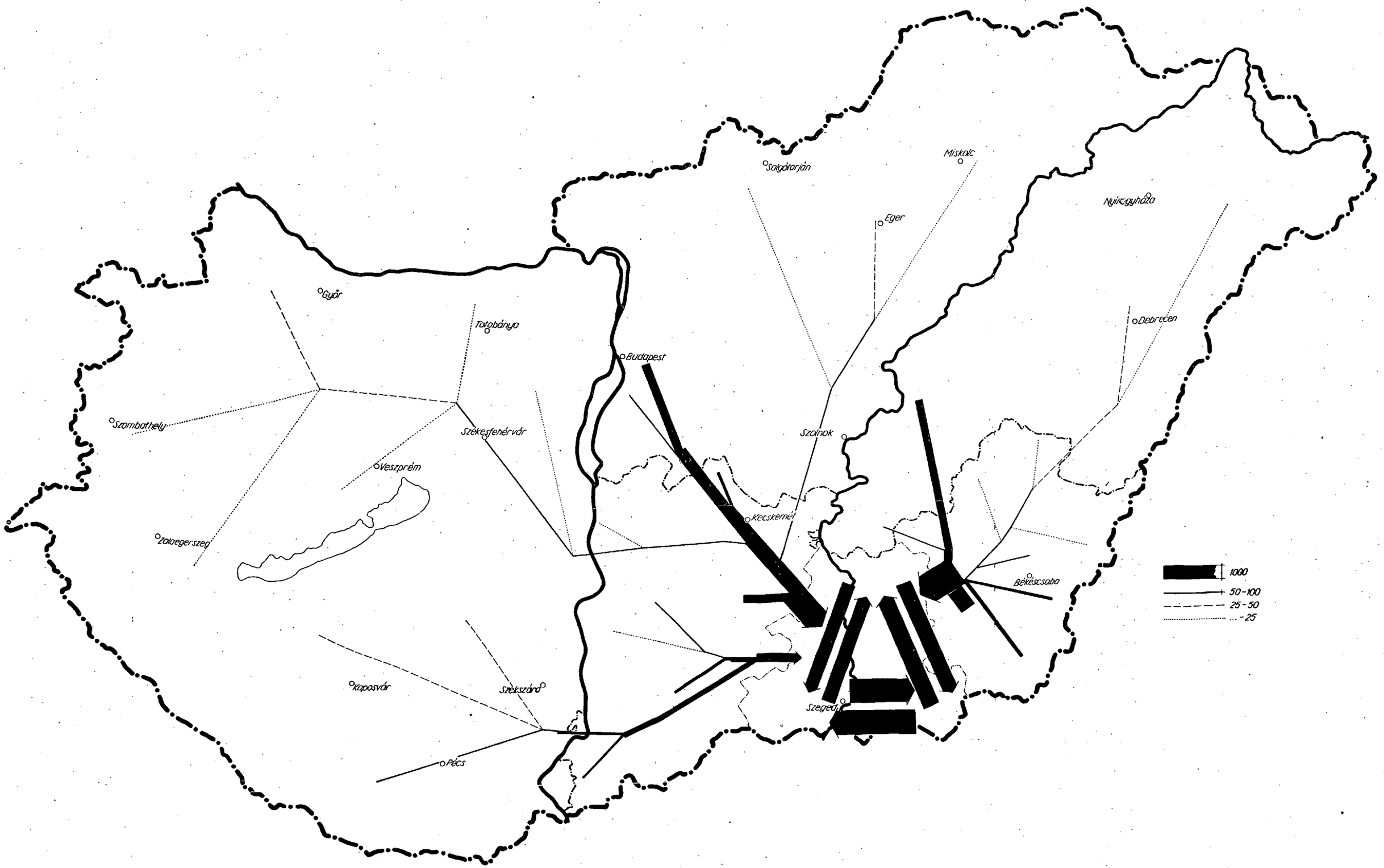
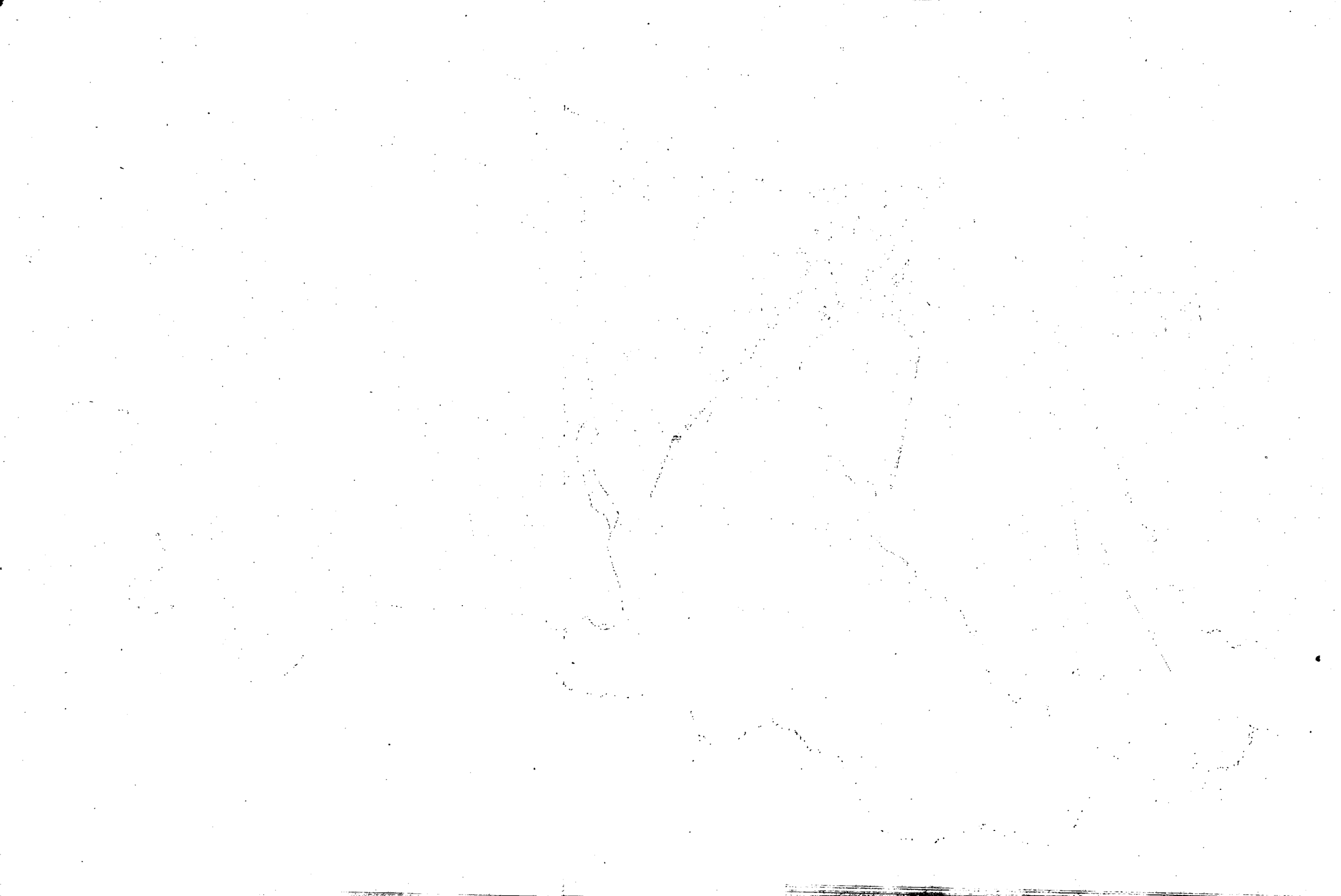


Figure 5. Vehicle traffic in the districts of Csongrád county (1963)



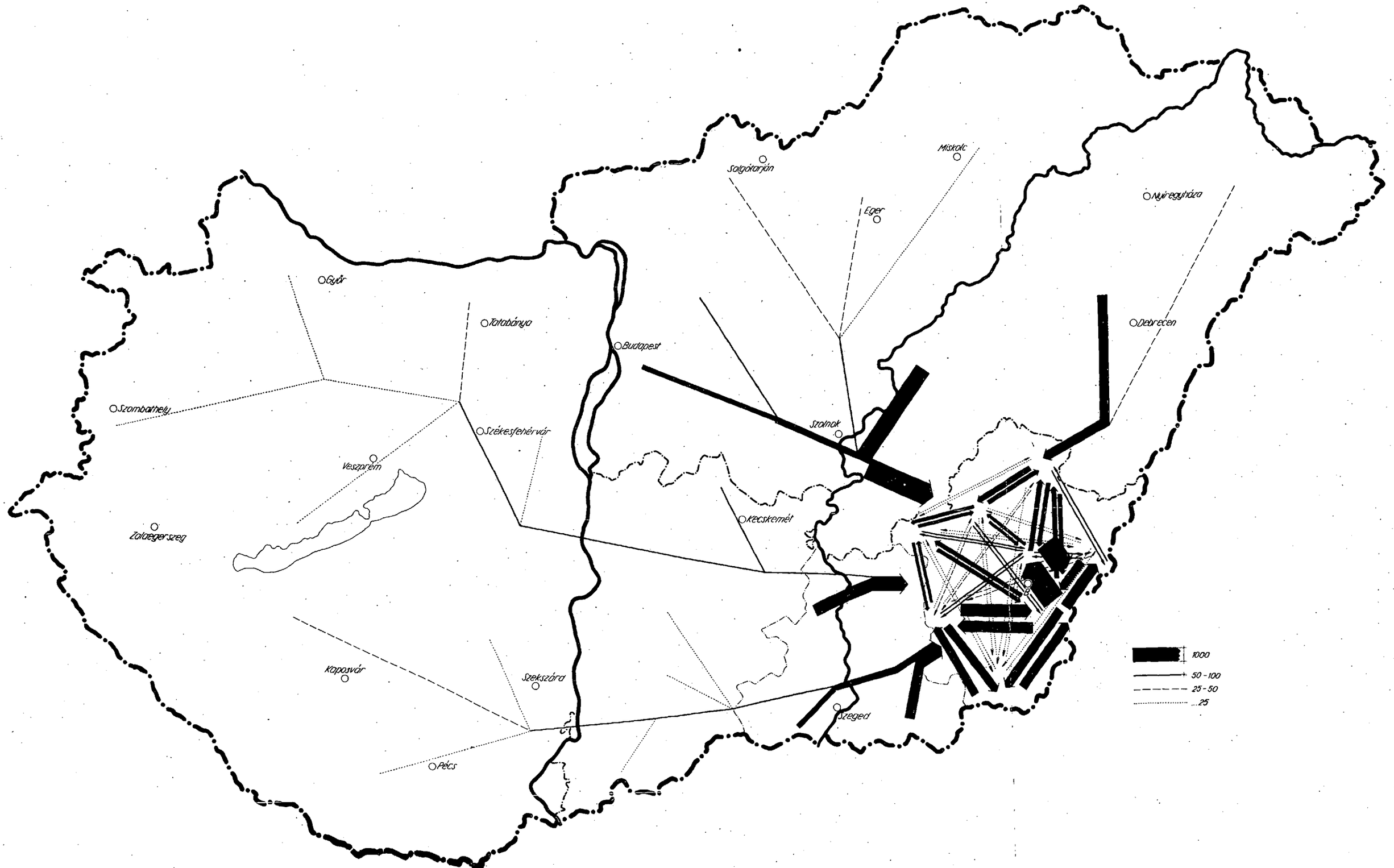


Figure 4. Vehicle traffic in the districts of Békés county (1963)

TABLE 5.

The most important fact of the heavy traffic

County	Naming	1965	%	Percent of change	1970	%	Percent of change
Bács-Kiskun	Weight of the transporting goods 1000 t.	3 264	37,6		3 479	31,0	+ 6,6
	goodstons/km	45 685	38,9		60 099	29,8	+31,6
Békés	Weight of the transporting goods 1000 t.	2 243	26,0		2 912	25,9	+29,2
	goodstons/km	27 821	23,7		55 737	27,6	+100,4
Csongrád	Weight of the transporting goods 1000 t.	3 156	36,4		4 846	43,1	+43,5
	goodstons/km	43 848	37,4		85 763	42,6	+95,6
Regions togather	Weight of the transporting goods 1000 t.	8 673	100,0		11 237	100,0	+29,6
	goodstons/km	117 344	100,0		201 599	100,0	+71,8

TABLE 6.

Transport of goods of the carriing (VOLÁN) in the southern part of the Great Plain
(sort of goods)

Naming	1970 tons	Division %
1. Coal, briquette, coke	620 331	5,5
2. Iron ore, manganese ore, bauxite	53 536	—
3. Stone	1 077 778	9,6
4. Pebble	1 771 272	15,8
5. Sand, earth, clinkers	2 526 142	22,6
6. Lime, cemuet	919 065	8,2
7. Brick, tile	331 916	3,1
8. Wood, timber	193 084	1,7
9. Milling-product	119 572	1,1
10. Sugar-beet, sugar, potato	177 299	1,6
11. Fruit, greens	307 305	2,7
12. Other food-products	995 817	8,9
13. Other goods	1 411 137	12,6
14. Iron and metal (steel) ware	364 748	3,3
15. Chemical product	361 282	3,3
Togather	11 177 284	100.0

transmission line for the southern part of the Great Plain is 5.1 km, i. e. 11% of teh national network.

The length of the natural gas pipelines is 491 km. The region yields 42% of the natural gas gained in the country. Thus it is understandable that it has a large share (24%) of the pipeline network.

Determination of the transport geographic situation of the settlements

The transport geographic situation of a given point is a relative concept. The judgment of it depends on what it is related to. Several settlements on main roads and railroad lines have excellent transport facilities and yet their situation far away from the center of their region is less favorable than that of some settlements near to the center which are connected with the center only by an approach road. It follows from the internal life rhythm of the microregion that the economic, social, and cultural life, production and consumption (in the agriculture in large part also selling) are connected with the centers. Thus the accessability of the centers is indicative of a certain kind of transport geographic situation that is in several respects important in the research of microregions.

For the research of economic microregions and the delineation of their boundaries it is expedient to consider particularly the following elements of land transport:

a) the size of road vehicle traffic,

b) the frequency of buses,

c) the ratio of the public traveling with railway and bus season tickets to the population,

d) the time needed for reaching the center by the most suitable of the regularly running vehicles.

The other aspects of transport, such as the structure of the goods transport, its territorial distribution and the direction of transport yield complementary data concerning the economic structure and external relations of the regions. The analysis of these factors, as we have seen earlier, is necessary for the judgment of another set of problems.

a) The road traffic map prepared on the basis of the vehicles passing through shows well the centers, that is the traffic nodes, the rate of the gradually increasing traffic streaming toward them, and the road stretches with little traffic usually on the border of the microregion. Unfortunately the data of the last KPM survey have not yet been summarized and so we can only count with the road traffic data of 1963. The difference between the two dates is no doubt considerable but the main ratios we need have not changed basically. In order to facilitate further analysis of the roads crossing the settlements it is convenient to class them into categories.

Traffic is

— slight, if the transit traffic is below 500 tons per day,
— medium, if is between 500—1000 tons per day,
— heavy, if it is 1000—2000 tons per day,
— very heavy, if it is above 2000 tons per day.

According to the traffic of the roads the settlements can be classified into categories, and if these are mapped the territorial differences express certain transport geographic situations. This is natural since depending on the size of the center the settlements with short-distance or heavier transit or local traffic are distinct from the others. However, the figure is only partly suitable for drawing far-reaching conclusions for in itself it does not reflect the situation of the settlements, but shows the traffic nodes of different size, the lines with heavier traffic and the areas with little traffic, and thereby indicates the boundaries of the microregions. Road traffic is absolutely necessary for analyzing the internal economic dynamism of the microregions since it expresses the relations of the centers and the areas under their influence. Yet we will disregard this here and deal with the territorial ration and differences (Fig 7).

b) For the analysis of the frequency of bus runs the freshest statistical data are available and thus they reflect the present situation. The inclusion of the frequency of bus runs is justified by the fact that the mapping of it reflects both the ratio and the direction of road travel. Accordingly the number of bus lines shows the transport geographic situation of each settlement, the place where it belongs and its traffic attraction. Similarly to the scale of traffic the map gives a zonal picture corresponding to the situation of the settlements and at the same time shows the boundaries of the attraction zones of the traffic nodes. The use of the cartogram so constructed is manifold: its zonal character is suitable for categorizing the settlements under consideration of the other factors of transportation, while the directions of traffic are necessary for delineation of the microregions (Fig. 8.).

It is convenient to classify the settlements on the basis of the frequency of bus runs as follows:

— their frequency is low, if the number of daily runs is less than 6,
— medium, if the number of daily runs is 6—15,

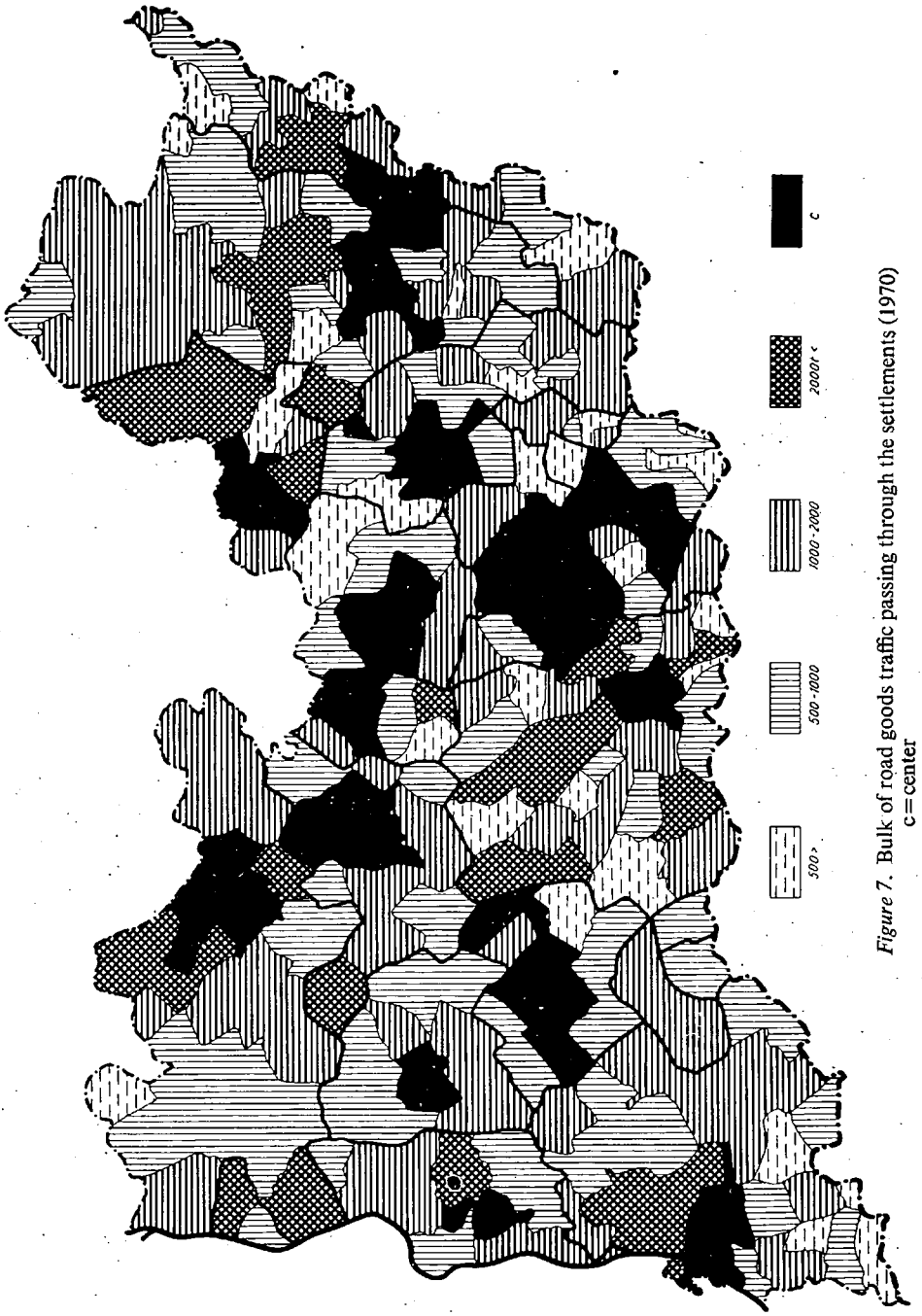


Figure 7. Bulk of road goods traffic passing through the settlements (1970)
c = center

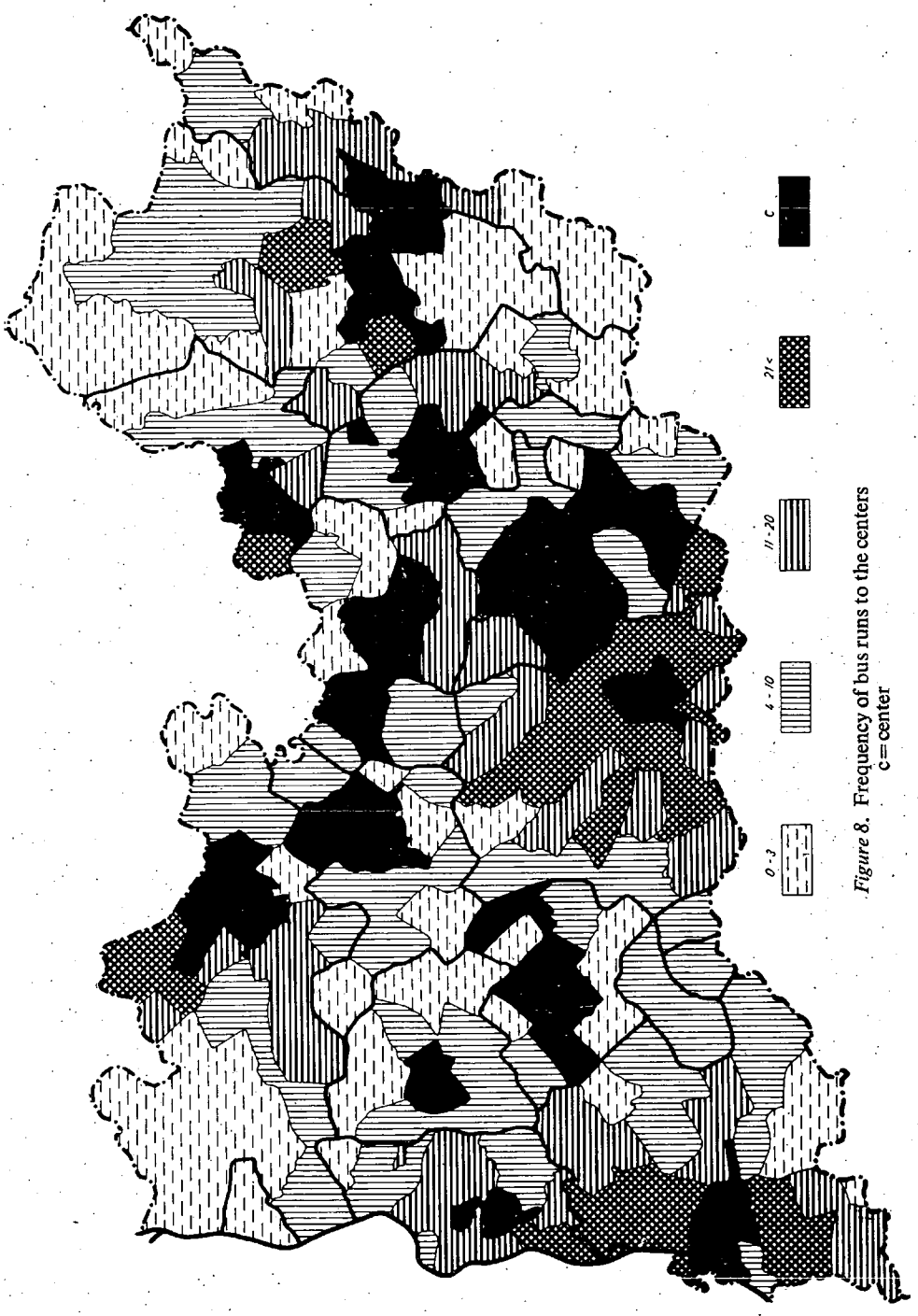


Figure 8. Frequency of bus runs to the centers
c = center

— high, if the number of daily runs is 15—30,
— very high, if the number of daily runs is over 30.

The values of the categories were chosen seemingly arbitrarily; this is not really so because the value limits were determined by the sharp differences in the frequ ency of bus runs.

c) The ratio of those traveling with railway and bus season tickets to the population is also very illuminating from the point of view of the microregions. The inclusion of this factor in the analysis is justified by the fact that so far we have not taken rail traffic into consideration. The transportation of goods is less interesting in this respect. On the other hand the majority of regular travelers do not leave the microregions and thus this fact must be reckoned with. The heaviness of road traffic doest not fully reflect the frequency of bus runs, but the frequency of bus runs does reflect the ratio of the traveling population because the vehicles passing through the settlements are used in different measures by the suburban and rural populations. Consequently there is a difference also between settlements with the same amount of goods traffic or same number of bus runs. The number of those traveling by bus is essential because it corrects the afore-mentioned difference and reflects the relation between the center and the settlements; at the same time it is possible to show by it the influence of road and rail traffic combined. Of course the statistical material of the regular travelers does not reflect the full number of commuters beacuse many people of the settlements near to centers travel also by other vehicles and this is not included in our data. Yet the limits of error are not wide because in the winter season the majority of even those otherwise using their own vehicles buy season tickets. The difference does not alter the essence anyway, because those traveling with their own vehicles are counted in the survey of road traffic (Fig. 9.).

The numbers of those regularly traveling by rail and bus compared with the number of population can be classified simas above. shus the number of regular rail and bus travelers is

— low, if the ratio of regular travelers is below 0—5%;
— medium, if the ratio of regular travelers is 5.1—10%;
— high, if the ratio of regular travelers is above 10%.

According to the figure the number of regular travelers is high in the settlements near to centers and having rail and road connections. The other extreme is represented by settlements with unfavorable transport conditions farther away from traffic nodes. Besides assessing the transport geographic situation of the settlements these data, similarly to the other data concerning transport, can be used also independently for the examination of other phenomena such as the reorganization or mobility, etc. of the population.

d) In the assessment of the transport situation the time or distance of traveling is an indispensable factor. In transport, distance is a seemingly constant, in reality however, a very relative factor, the judgment of which depends on the vehicle used; therefore it is better to reckon with time. The different branches of transport are much better united on this basis because in the determination of the time zones that vehicle can be considered with which the destination can be soonest reached. This is roughly identical with the isochronic maps; the difference is that we consider the settlements as points independently from their extent in order to make their categorization easier (Fig. 10).

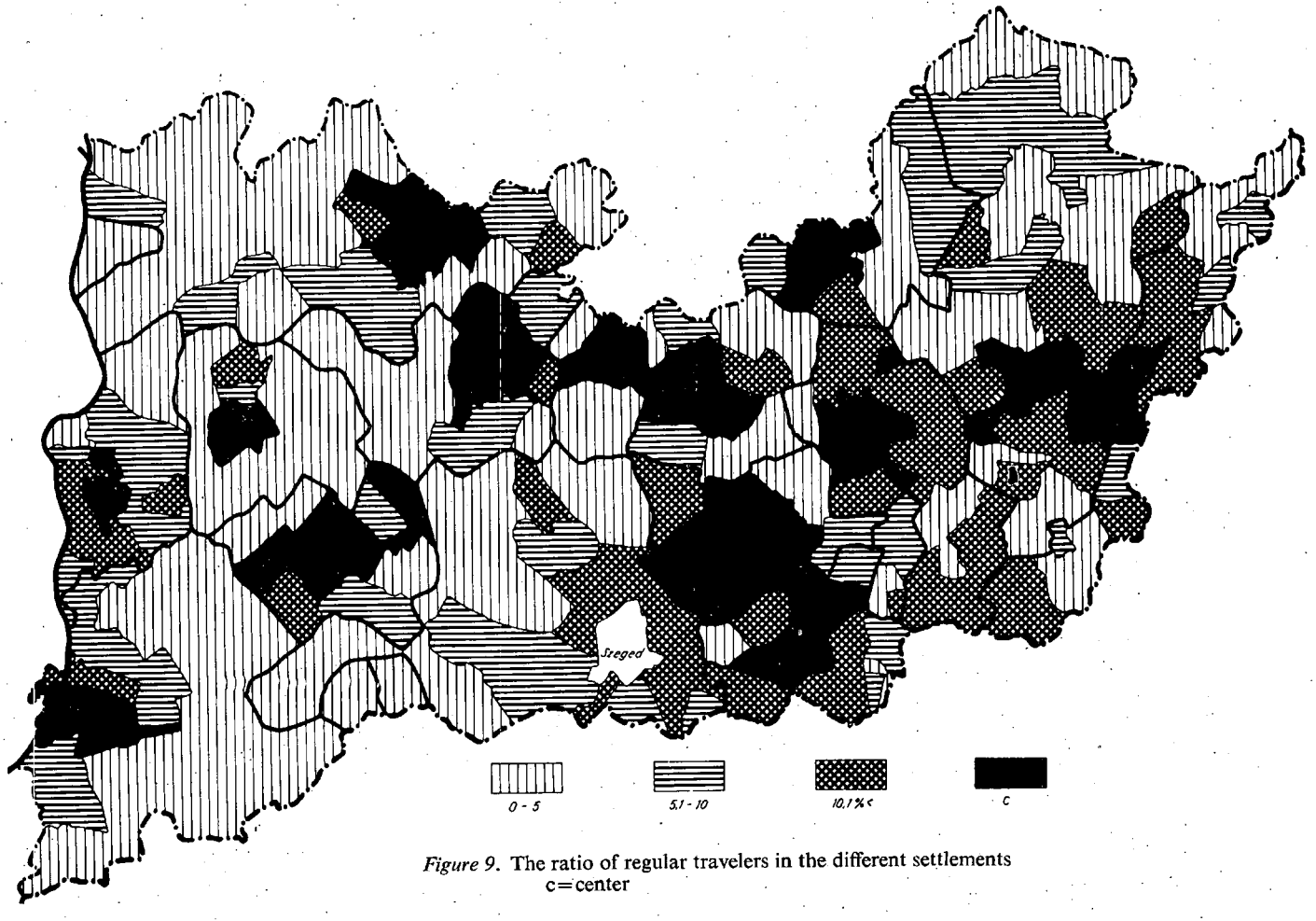


Figure 9. The ratio of regular travelers in the different settlements
c=center

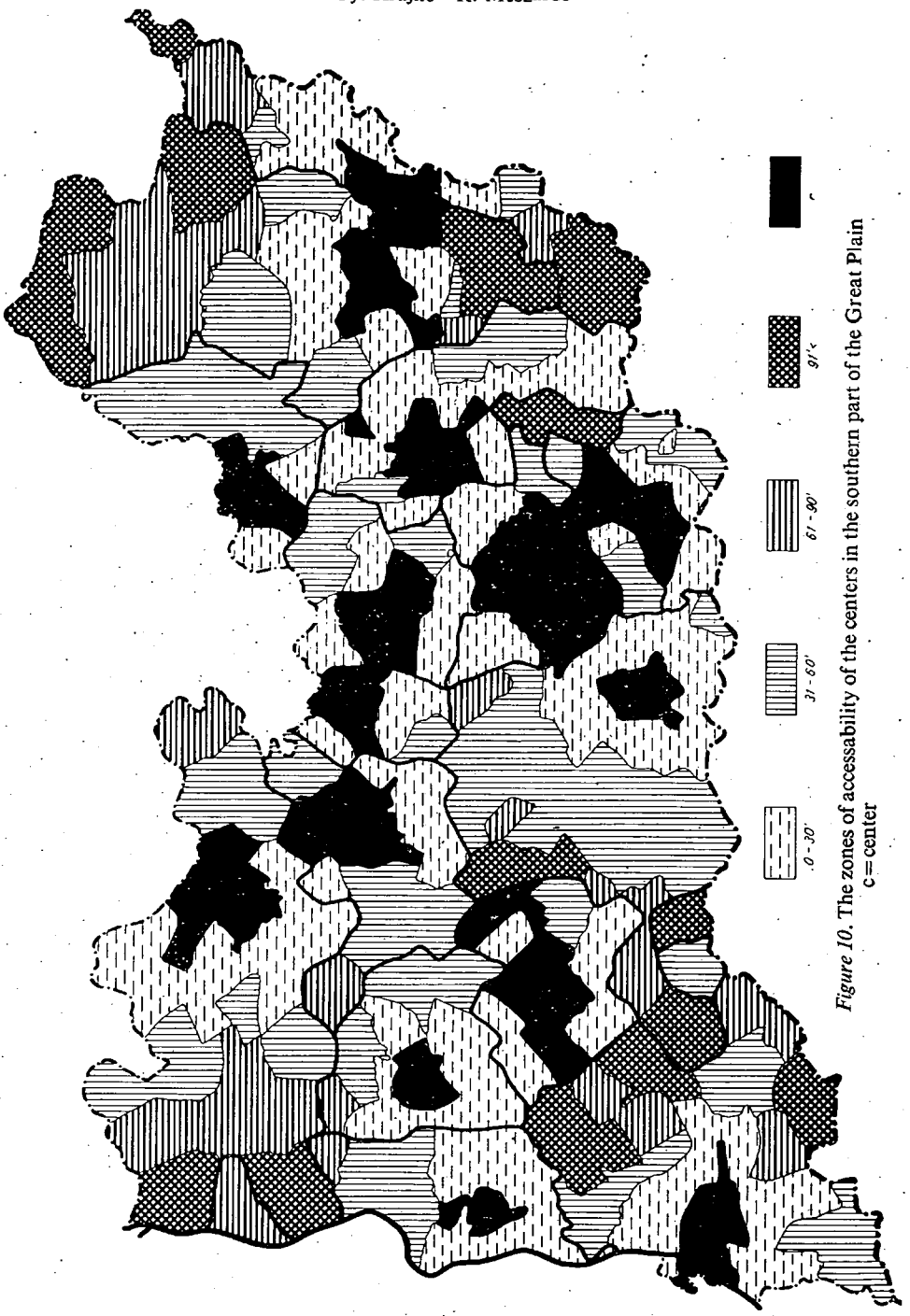


Figure 10. The zones of accessability of the centers in the southern part of the Great Plain
c = center

Under consideration of the time of approach counted from the centers the settlements can be classified according to the categories mentioned earlier. Approachability is

— excellent, if the center can be reached within 30 minutes,
— good, if the center can be reached in 31—60 minutes,
— medium, if the center can be reached in 61—90 minutes, and
— poor, if the time of reaching the center is more than 90 minutes.

In the classification we considered the economic and administrational centers as destinations which at the same time are centers of attraction also from the point of view of traffic. Disturbing factors may be some centers with lesser attraction wich offer a little advantage to the settlements of the area and at the same time figure with the same weight as the more important centers in the determination of the time zones. It is well known that the influence of a center within unitary time zones depends on its size and (the number of) its functions. The influence of Szeged 20 km from the town is incomparably stronger than that of Kiskőrös for example. The time zone of settlements near to smaller centers is indeed irrationally favorable, but as we will see, this is marred by the ratio of other indicators.

In the following the problem is how the factors mentioned can be combined so that they should indicate with the least possible distortion the transport geographic situation of the settlements.

In the course of the description of the factors we have seen that, although not always in the same degree, their territorial variations point in the same direction, for they reflect essentially the same process. On this basis they can be combined mechanically. It is only the time of approach that shows an opposite tendency; thus we can count this in as divisor. The combining formula is

$$K = \frac{a+b+c}{x}, \text{ where}$$

K = transport situation
a = category value of bus runs,
b = category value of goods traffic,
c = category value of ratio of travelers to the population,
x = category value of the time of approach.

If we increase the number of categories for the factors, we receive finer and more precise data. For the present purpose the number of categories is sufficient because even a more detailed analysis does not give an essentially more precise picture (Fig. 11).

The survey table reflects excellently the zone of settlements with favorable transport facilities around the centers together with the other extreme, the zone of villages with unfavorable, peripheral situation the development of which just for this reason differs in many respects from that of the former group. Very low are the values of the villages around Szeghalom, the settlements around Mezőkovácsháza, and Kiskunhalas (not counting a few neighboring villages and the area of the recently abolished district of Dunavecse. The last mentioned is equally far from Kecskemét and Kalocsa; this is why its indicators are poor. The difference between the centers is also striking, which is understandable because the stronger the economic and social influence of a center, the more settlements it attracts. (See the difference between Baja and Kiskun-

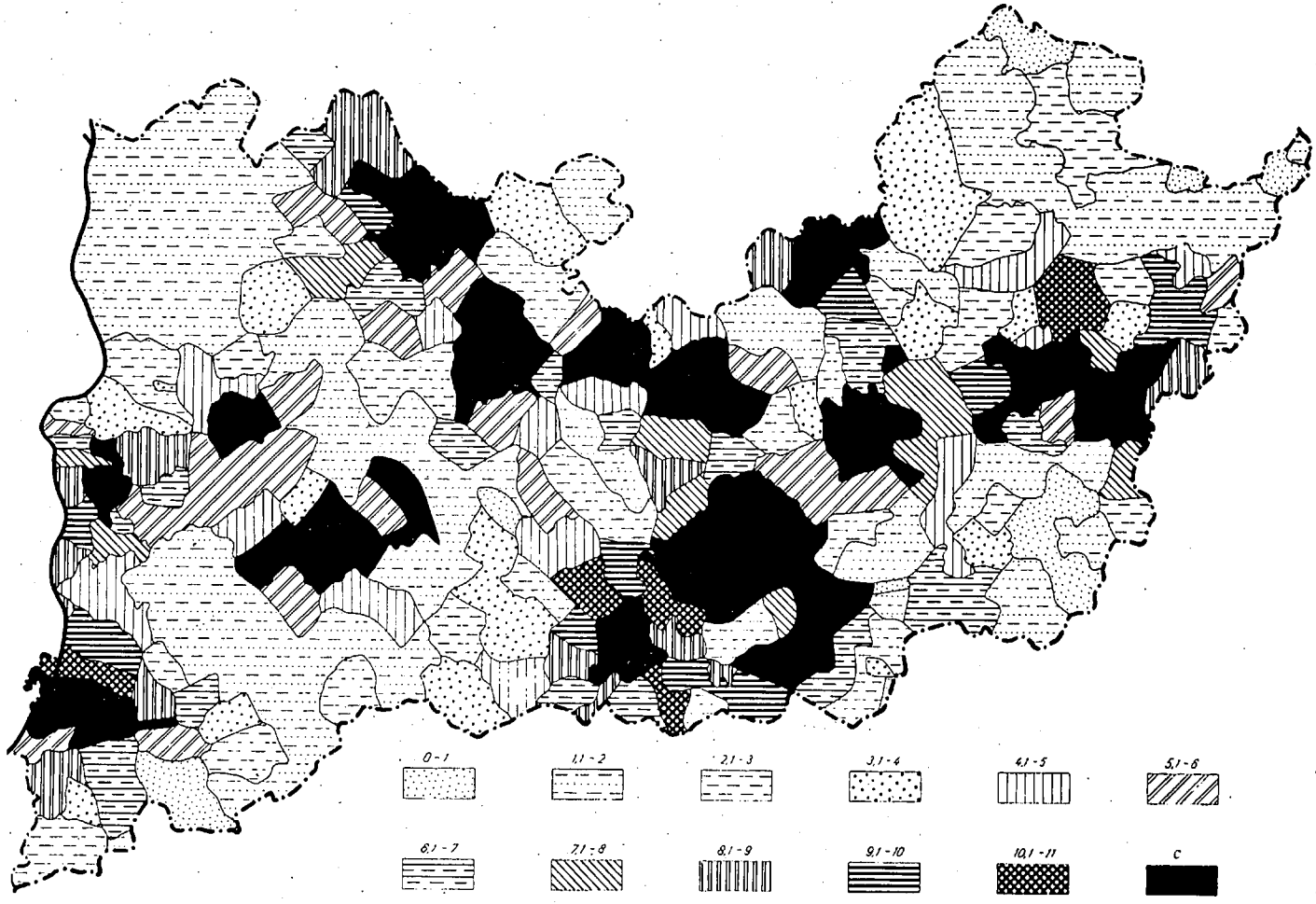


Figure 11. The transport geographic situation of the settlements of the southern part of the Great Plain c=center

halas). The figure clearly shows that the centers exert their influence on the settlements of the microregions also through the transport geographic situation.

The figures of transport geography partly bring us nearer to the determination of the microregions, partly — and this is even more important — they are indispensable for analyzing and judging the ecomic and social movement of the regions. We shall see later that there is for example a very close connection between the transport situation and migration. Its influence on the reorganization of the population is also demonstrable.